

## **Worksheet to Identify Potential Indicators for Ecological Monitoring**

You return to visit your park in 20 years and walk through the park with the current resource manager. The manager tells you about the current condition of the natural resources, the management issues, and threats of the day. What would that person describe to you?

*The dam. Energy development. Erosion control will still be an issue on the river. Still fighting exotic plants. Farms getting bigger and some decline. Pesticide residues from in-park control. Natural succession of the river and changes in riparian vegetation. Hopefully the prairie is restored but maintenance needed. Hopefully woody vegetation on the south side of the river. Purple loosestrife and tamarisk may be an issue.*

What are the park's most significant natural resources (e.g., the river and its tributaries, caves and cave fauna, rare plant communities, elk herd)?

*The river although not technically owned by the park. The prairie, both restored and native.*

What does your park contribute to regional biological diversity (e.g., what natural resources are preserved and protected at your park that are altered or threatened throughout the rest of the region)?

*None.*

What park-specific legislative mandates direct the park to monitor a particular natural resource at your park.

*None known.*

What federal and state-listed threatened and endangered species are known to occur in the park?

*Least terns, piping plovers in the vicinity. Pallid sturgeon in the river. Bald eagles roost in the winter. White locoweed is a state listed plant found in a Willard report.*

What is that status of your park's management plans?

*RMP is in development. GMP is out of date. Hopefully start in 05. Documents being scanned TIC (Technician Information Center out of DSC). Current Fire Mgt plan.*

What is currently being monitored at or near the park by NPS or other entities (e.g., plants by fire effects program, plants by LTEM, exotic plants by exotic plant teams, birds by Breeding Bird Survey, butterflies, stream by USGS, Christmas bird count, weather data, NRCS photography, visitors by park staff, state roadside counts --- use the checklist below)?

Air: No.

Amphibian: No.

Birds: None other than your species list.

Fire: Fire Effects monitoring.

Fish: Sturgeon monitored using an automated device that senses implants.

Geology: No.

Mammals: None known.

Meteorology: Standard weather station. Temp, precip, maybe barometric. Also rely on airport at Williston.

Pests: Gypsy moth traps placed on site by state. Informal monitoring of mice indoors.

Pesticides Herbicides are tracked.

Reptiles: No.

Soils: No.

Sound: No.

Vegetation: Jeff Bradybaugh at THRO set up some plots following restoration.

Visitors Park monitors visitors at the structure. Have Bodmer trail but very little use and not monitored.

Visual Landscape: *No.*

Water Quality: Just well water monitoring.

Wildlife or Plant Disease: No.

What are the stressors on park resources? What are the sources of each stressor?

*Dam operations, i.e., altered hydrograph. Exotic plants, including those from neighbors. Lack of grazing. Road mortality. Fragmentation and small size. Variety of surrounding ownership and lack of coordination. Lots of disturbance such as special events. Pesticides. Energy development in terms of viewscape, but have not experience direct air quality problems. Lots of aerial spraying south of the river on sugar beets, perhaps using insecticides. Occasional cattle trespass.*

What potential management actions in the future may require monitoring (e.g., potential species reintroductions, land acquisitions, commercial uses)?

*Erosion control actions may require monitoring of pallid. Two 10-acre tracts south of the river that are native riparian forest.*

What would your partners like you to monitor?

*Would probably like to monitor exotics; concern about tamarisk.*

What current research is occurring at the park (research differs from monitoring in that it is typically of shorter duration, say 2-3 years)?

*None other than I&M work. Some Corps erosion studies upstream.*

Vital signs are: 1) sensitive enough to provide early warning of change, 2) have low natural variability, 3) can be accurately and precisely measured, 4) have costs and effort of measurement that are not prohibitive, 5) have monitoring results that can be interpreted and explained, 6) are low impact to measure, and 7) have measurable results that can be replicated with various personnel. Off the top of your head, look into your crystal ball and choose several vital signs to monitor over time to track the condition of natural resources within your park (items can range from broad, e.g., the stream, to narrow, e.g., a particular species). What are those vital signs? Rank them in order of importance.

*Vegetation communities  
Birds throughout the park.  
Amphibians in the floodplain*

*Air quality.*

*Soil characteristics.*

*Butterflies*

*Inverts in response to pesticides.*